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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/053,079 | 01/17/2002 | Lisa Karen Fleischer | 1-3-3-5 | 5536 |

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| EXAMINER | |
|---|---|
| NGUYEN, BINH QUOC | |
| **ART UNIT** | **PAPER NUMBER** |
| 2664 | |

DATE MAILED: 10/17/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/053,079 | FLEISCHER ET AL. | |
| | Examiner | Art Unit | |
| | Binh Q. Nguyen | 2664 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *03* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *01/17/2002*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14, 16-18, 20-22* is/are rejected.

7)☒ Claim(s) *15, 19* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *01/17/2002*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

# DETAILED ACTION

## *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims **8-12, 16-18, and 20** are rejected under 35 U.S.C. 102(e) as being anticipated by ***Huai et la*** the US Patent No: (US 6,928,484), hereinafter referred to as ***Huai***.

**Regarding to Claim** 8. ***Huai*** teaches a method for determining routing in a network comprising a plurality of nodes interconnected through links, the method comprising:

setting costs for each link in the network; initializing primary and second flows for each link to at least one predetermined value *(see Fig. 3, col. 1, lines 33-43)*;

selecting a commodity, each commodity comprising a source-sink pair and having a demand *(see col. 6, lines 11-67)*;

routing a demand through the network for the selected commodity *(see Fig. 4)*;

updating costs for links over which the demand is routed *(see col. 7, lines 5-23)*; and

performing the steps of selecting, routing, and updating until a value of a function is at least as much as a predetermined value *(see Fig. 5 & 6 col. 5, line 11-to-col. 8, line 55)*.

**Regarding to Claim** 9. ***Huai*** teaches the method of claim 8, wherein the step of performing the steps of selecting, routing, and updating until a value of a function is at least as much as a predetermined value

further comprises the step of performing the steps of selecting, routing, and updating until an approximate solution to the network routing is within a predetermined error from an optimum network routing *(see Fig. 5 & 6 col. 5, line 11-to-col. 8, line 55)*.

**Regarding to Claim** 10. ***Huai*** teaches the method of claim 8, wherein the function is a dual objective function *(see col. 2, lines 9-32)*.

**Regarding to Claim** 11. ***Huai*** teaches the method of claim 10, wherein the dual objective function is part of a linear program designed to maximize a first variable of the dual objective function subject to a first plurality of conditions *(see col. 2, lines 9-32)*.

**Regarding to Claim** 12. ***Huai*** teaches the method of claim 11, wherein there is also an objective function as part of a second linear program, the second linear program designed to minimize a variable of the objective function subject to a second plurality of conditions, and wherein the method further comprises the step of using the objective function to determine if the value of the dual objective function is correct *(see col. 2, lines 9-32)*.

**Regarding to Claim** 16. The method of claim 8, wherein the step of routing demand through the network for the selected commodity further comprises the steps of:

for each link over which demand is routed, determining an amount of demand to route on the link *(see Fig. 5 & 6 col. 5, line 11-to-col. 8, line 55)*;

increasing primary flow by the determined demand; and increasing secondary flow by the determined demand *(see Fig. 5 & 6 col. 5, line 11-to-col. 8, line 55)*.

**Regarding to Claim** 17. The method of claim 16, wherein the determined demand is selected by selecting a minimum of one of the following: demand for the commodity; a capacity of a primary amount of demand; and a capacity of a secondary amount of demand *(see Fig. 5 & 6 col. 5, line 11-to-col. 8, line 55)*.

**Regarding to Claim** 18. The method of claim 8, wherein the step of setting costs for each link in the network further comprises the step of setting costs for each link in the network by setting a cost for a link equal to a predetermined delta value divided by a capacity of the link *(see Fig. 5 & 6 col. 5, line 11-to-col. 8, line 55)*.

**Regarding to Claim** 20. The method of claim 8, further comprising the steps of setting a desired budget and setting a current budget to a predetermined budget, and wherein the step of performing the steps of selecting, routing, and updating until a value of a function is at least as much as a predetermined value further comprises the steps of the steps of selecting, routing, updating, and modifying the current budget until the value of the function is at least as much as the predetermined value *(see Fig. 5 & 6 col. 5, line 11-to-col. 8, line 55)*.

## *Claim Rejections - 35 USC § 103*

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. **Claims 1-7, 13-14, and 21-22** are rejected under 35 U.S.C. 103(a) as being unpatentable over ***Huai et al*** (US Patent No. 6,928,484) in view of ***Hsu*** (US Patent No. 6,363,319).

**Regarding to Claims 1, and 3**. ***Huai*** teaches a method for determining routing in a network comprising a plurality of nodes interconnected through links, where a demand for each of a plurality of commodities is to be routed over the network, the method comprising:

routing a demand for one of the commodities on a set of paths having a minimum cost, the set of paths comprising at least one primary path and at least one secondary path, wherein demand will be routed from a primary path to a secondary path during a failure *(see col. 2, lines 9-32)*;

iterating the steps of routing, adjusting, and performing until an objective value is minimized, whereby flow for each of the links in the network is determined *(see col. 3, lines 45-62, and col. 5, line 11-to-col. 8, line 55)*; and

performing the step of adjusting for each of a number of potential failures *(see the abstract, col. 1, line 18-to-col. 8, line 55).*

***Huai*** fails to teach adjusting the minimum total cost through an exponential function based on an amount of flow through links over which the demand is routed.

However, ***Hsu*** teaches adjusting the minimum total cost through an exponential function based on an amount of flow through links over which the demand is routed *(see col. 13, lines 33-43).*

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine ***Huai*** and ***Hsu*** for calculating based on amount of flow through links over which the demand is routed. The motivation for doing that is to select an efficiency path, which has a minimum cost.

**Regarding to Claim 2.** ***Huai*** teaches the method of claim 1, wherein the step of routing further comprises the step of minimizing a function that represents a marginal cost of a link when the network is in a particular state, wherein the function is minimized for both the at least one primary path and the at least one secondary path *(see Fig. 5 & 6, col. 5, line 11-to-col. 8, line 55).*

**Regarding to Claim** 4. ***Huai*** teaches the method of claim 1, wherein the step of performing the step of adjusting further comprises the step of determining a backup flow strategy comprising specifying, for each failure, how much flow for a primary path gets re-routed to one or more secondary paths *(see Fig. 5 & 6, col. 2, lines 1-64 and col. 5, line 11-to-col. 8, line 55).*

**Regarding to Claim** 5. ***Huai*** teaches the method of claim 4, wherein the backup flow strategy comprises allowing secondary paths to be shared, secondary paths to be dedicated, or secondary paths to be shared and dedicated *(see col. 2, lines 1-64).*

**Regarding to Claim** 6. ***Huai*** teaches the method of claim 4, wherein the objective value is a total expected cost of flow in the network over a predetermined time period, wherein the expected cost is taken over a probability distribution that includes the failures, and wherein the backup flow strategy is created wherein flows for any failure will be recovered by routing the flows through secondary paths *(see col. 2, lines 1-64 and col. 5, line 11-to-col. 8, line 55).*

**Regarding to Claim** 7. ***Huai*** teaches the method of claim 1, further comprising the step of computing a number of iterations after which the objective value will be within a specified tolerance from an optimum objective value *(see col. 2, lines 1-64 and col. 5, line 11-to-col. 8, line 55)*.

**Regarding to Claim** 13. ***Huai*** teaches the method of claim 8 *(see claim 8)*, wherein the step of updating costs further comprises the step of, for each of a plurality of failure conditions and for each link over which demand is routed, updating costs through an exponential function *(see col. 13, lines 33-43)*.

**Regarding to Claim** 14. ***Huai*** teaches the method of claim 13, wherein the step of updating costs through an exponential function further comprises the steps of:

determining if the primary flow is part of a set of paths affected by the failure condition *(see col. 2, lines 9-32)*;

for all links that are part of the primary flow, updating costs for these primary flow links through the exponential function when the primary flow is part of a set of paths affected by the failure condition *(see Fig. 5 & 6 col. 5, line 11-to-col. 8, line 55)*; and

for all links that are part of the secondary flow, updating costs for these secondary flow links through the exponential function when the primary flow is part of a set of paths affected by the failure condition *(see Fig. 5 & 6 col. 5, line 11-to-col. 8, line 55)*.

**Regarding to Claim** 21. ***Huai*** teaches an apparatus for determining routing in a network comprising a plurality of nodes interconnected through links, where a demand for each of a plurality of commodities is to be routed over the network, the apparatus comprising:

a memory that stores computer-readable code *(see col. 5, lines 11-21, and col. 11, lines 1-19)*;

a processor operatively coupled to the memory, the processor configured to implement the computer-readable code, the computer-readable code configured to *(see col. 5, lines 11-21, and col. 11, lines 1-19)*:

route a demand for one of the commodities on a set of paths having a minimum cost, the set of paths comprising at least one primary path and at least one secondary path, wherein demand will be routed from

a primary path to a secondary path during a failure *(see the abstract, Fig. 5 & 6 col. 5, line 11-to-col. 8, line 55)*;

perform the step of adjusting for each of a number of potential failures *(see the abstract, Fig. 5 & 6 col. 5, line 11-to-col. 8, line 55)*; and

iterate the steps of routing, adjusting, and performing until an objective value is minimized, whereby flow for each of the links in the network is determined *(see the abstract, col. 1, line 18-to-col. 8, line 55)*.

***Huai*** fails to teach adjusting the minimum total cost through an exponential function based on an amount of flow through links over which the demand is routed.

However, ***Hsu*** teaches adjusting the minimum total cost through an exponential function based on an amount of flow through links over which the demand is routed *(see col. 13, lines 33-43)*.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine ***Huai*** and ***Hsu*** for calculating based on amount of flow through links over which the demand is routed. The motivation for doing that is to select an efficiency path, which has a minimum cost.

**Regarding to Claim** 22. ***Huai*** teaches an article of manufacture for determining routing in a network comprising a plurality of nodes interconnected through links, where a demand for each of a plurality of commodities is to be routed over the network, the article of manufacture comprising:

a computer-readable medium having computer-readable code means embodied thereon *(see col. 5, lines 11-21, and col. 11, lines 1-19)*, the computer-readable code means comprising:

a step to route a demand for one of the commodities on a set of paths having a minimum cost, the set of paths comprising at least one primary path and at least one secondary path, wherein demand will be routed from a primary path to a secondary path during a failure *(see col. 2, lines 9-32 and col. 5, line 11-to-col. 8, line 55)*;

a step to perform the step of adjusting for each of a number of potential failures *(see the abstract, Fig. 5 & 6 col. 5, line 11-to-col. 8, line 55)*; and

a step to iterate the steps of routing, adjusting, and performing until an objective value is minimized, whereby flow for each of the links in the network is determined *(see the abstract, Fig. 5 & 6 col. 5, line 11-to-col. 8, line 55).*

***Huai*** fails to teach a step to adjust the minimum total cost through an exponential function based on an amount of flow through links over which the demand is routed.

However, ***Hsu*** teaches adjusting the minimum total cost through an exponential function based on an amount of flow through links over which the demand is routed *(see col. 13, lines 33-43).*

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine ***Huai*** and ***Hsu*** for calculating based on amount of flow through links over which the demand is routed. The motivation for doing that is to select an efficiency path, which has a minimum cost.

## *Allowable Subject Matter*

5. **Claims 15, and 19** are objected to as being dependent upon a rejected base claim, but would be allowable if rewrite in independent form including all of the limitation of the base claim and any intervening claims.

## *Contact Information*

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Binh Q. Nguyen whose telephone number is 571-272-8563. The examiner can normally be reached on M-F: 9:00 AM - 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wellington Chin can be reached on 571-272-3134. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Respectfully submitted,

By: ----------
Binh Q. Nguyen
Patent Examiner
10/12/2005

WELLINGTON CHIN
SUPERVISORY PATENT EXAMINER